

Physical Activity Review

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ISPAPOFF

ISPAPOFF

A
multi-
disciplinary
Scientific
Society
endeavouring
to encourage
further
Research
in the field
of
Osteoporosis
Falls &
Fractures”

The aim of
the Society is
to
encourage
physical
activity at
all ages
of life.”

The Official Newsletter of the International Society of Physical Activity for the Prevention of Osteoporosis Falls and Fractures

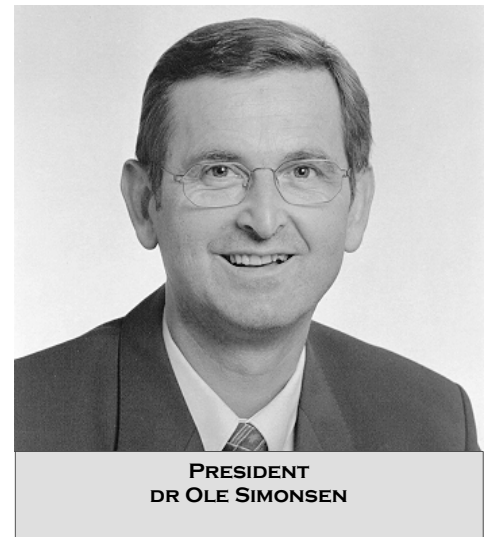
Since the last Newsletter the Society has continued to grow in terms of both numbers of people joining and in separate counties developing their own branches. The Danish Branch was formed this year and has had its first meeting (contact: Dr Kent Kramme – kent.kramme@ouh-fyns-amt.dk). Other branches are currently being formed in Belgium (contact Dr Mark Lissens - mark.lissens@ping.be), Turkey (contact Prof. Gulseren Akyuz – akyuzg@superonline.com) and Holland (contact Vianda Stel – emgo@med.vu.nl).

In line with our policy we are also establishing links with other societies. We hope to have out 2003 annual meeting during the ISAPA (International Society for Ageing and Physical Activity) 6th World Congress – to be held at Loughborough University, UK. For further details of ISAPA visit the website (www.isapa.org).

This year we are organising a Working Group on Physical Activity at the ASBMR (American Society for Bone and Mineral Research) in Phoenix, Arizona, on Sunday, 14th October 2001 (website: www.asbmr.org).

For the Physical Activity Newsletter to be a continued success please continue to send news, reviews and details of forthcoming events in your part of the world. Photographs are welcome.

T. Masud (Secretary, ISPAPOFF)



DANISH BRANCH OF ISPAPOFF

The Danish branch of ISPAPOFF was established this year as an interest group within the Danish Bone Medical Society with the local name DIFAK (Dansk Interessegruppe for Fysisk Aktivitet og Knogle-sundhed). During the annual meeting of the Danish Bone Medical Society in April 2001 a work shop on physical activity in the prevention and rehabilitation of osteoporotic fractures was arranged for health care professionals. Aspects of primary, secondary and tertiary prophylaxis in osteoporosis were discussed which highlighted the importance of physical activity among other measures in all three domains.

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Multidisciplinarity will be given a high priority in the Danish branch of IsPAPOFF. Employees in kindergarten, teachers, sports clubs, health care authorities and everybody with an interest in health promotion will be invited to participate. The work will be continued on a scientific basis and the group will continuously offer inspiration, collaboration and support to Danish groups of scientists in this field.

Three working groups were established to take the aims of the Danish Branch forward:

1) Scientific Evidence (lead: Dr Kim Brixen)

This group will in the near future publish a critical review on the literature dealing with the effect of physical activity in primary, secondary and tertiary prophylaxis against osteoporotic fractures, which hopefully will inspire further scientific work in this field.

2) Osteoporosis Schools (lead: Birgitte Malmros)

Several initiatives have been made to establish health promotion classes for patient with osteoporotic fractures. The group in Århus has demonstrated that among women aged 55 to 75 years with at least one vertebral fracture, exercise classes have significant beneficial effect on pain, muscle strength and quality of life. Randomised Control Trials of health education classes for these patients are currently on-going in Hjørring and Odense. The immediate goal for this group is for collaboration between these present initiatives and to promote further development.

3) Children and Young People (lead: Kent Kramme)

Healthy life style education starting early in life has obtained a top priority by the government and local health care authorities in Denmark. This working group will promote the aspects of balance, muscles and bones and collaborate with the various health promoting initiatives which will be initiated in the near future. The challenge is the development of methods which are able to inspire a majority among these age groups to a healthy life style. We believe that an image of strong muscles and bones may inspire these age groups and become important in this health promotion field.

There has been much enthusiasm for the formation of the Danish Branch of IsPAPOFF and the high calibre and energy of the members will undoubtedly lead to worthwhile developments from which the population will benefit. Dr Moustapha Kassem will be the contact to the Danish Bone Medical Society and Lis Mosekilde will be the lead contact to foreign organisations.

Dr Ole Simonson (Chairman of DIFAK and President of IsPAPOFF)

Moyer-Mileur, L. J., Brunstetter, V., McNaught, T. P., Gill, G. and Chan, G. M. (2000)

Selected Recent Papers: Children/Adolescents

“Daily physical activity program increases bone mineralization and growth in preterm very low birth weight infants.” *Pediatrics* 106(5): 1088-1092.

A programme of physical activity, involving daily flexion/extension of extremities through the range of motion was found to increase weight gain, forearm length, bone area, bone mineral content (BMC) and bone mineral density (BMD) in premature infants (mean 30 weeks gestation) in this randomised controlled trial. All infants received milk fortified with calcium, phosphorous and vitamin D, so findings might not be generalisable to infants receiving standard formula or unfortified human milk.

Janz, K. F., Burns, T. L., Torner, J. C., Levy, S. M., Paulos, R., Willing, M. C. and Warren, J. J. (2001).

“Physical activity and bone measures in young children: The Iowa Bone Development Study.” *Pediatrics* 107(6): 1387-1393.

This study compared bone mineral content and bone density according to physical activity participation in children aged 4-6y. Physical activity was positively associated with BMC and BMD. The magnitude of this relationship was such that an extra 10 minutes of exercise was associated with an increment of 3% in hip, and 2% in spine, BMC. The study provides a useful examination of associations between physical activity and bone in an age group which has not received much previous study. However, as a cross-sectional study, some selection bias could well have contributed to findings- children who are relatively larger will have higher BMC, and may also have an advantage in sporting abilities which might increase the likelihood of their participation.

Fuchs, R. K., Bauer, J. J. and Snow, C. M. (2001).

“Jumping improves hip and lumbar spine bone mass in prepubescent children: A randomized controlled trial.” *Journal of Bone and Mineral Research* 16(1): 148-156.

Children who participated in a programme of jumping (100 jumps from 61cm blocks, three times per week for 7 months) had 3-4% greater increases in BMC than controls. There were also larger increases in BMD at the lumbar spine, and bone area at the hip, in jumpers relative to controls.

Lehtonen-Veromaa, M., Mottonen, T., Irjala, K., Nuotio, I., Leino, A. and Viikari, J. (2000).

“A 1-year prospective study on the relationship between physical activity, markers of bone metabolism, and bone acquisition in peripubertal girls.” *Journal of Clinical Endocrinology and Metabolism* 85(10): 3726-3732.

This group previously observed that girls who participated in gymnastics had higher bone mass than runners and controls. This longitudinal study showed that the annual increase in hip BMD in gymnasts was also greater than that in runners and controls, although bone turnover markers did not differ significantly between groups.

Lehtonen-Veromaa, M., Mottonen, T., Kautiainen, H., Heinonen, O. J. and Viikari, J. (2001).

“Influence of physical activity and cessation of training on calcaneal quantitative ultrasound measurements in peri-pubertal girls: A 1-year prospective study.” *Calcified Tissue International* 68(3): 146-150.

This study in girls aged 11-17y found higher ultrasound measurements of the heel in gymnasts and runners than controls. Over the subsequent year, values increased in all subjects except those gymnasts and runners who ceased training. The study confirms that physical activity participation is associated with beneficial effects on bone, and that effects of physical activity are reversed on cessation in girls of this age. That the group found better values in runners than controls in this study, but not the previous study, might be related to the different measurement site or technique- ultrasound may respond to structural parameters.

Karlsson, M. K., Magnusson, H., Karlsson, C. and Seeman, E. (2001).

Young Adults

“The duration of exercise as a regulator of bone mass.” *Bone* 28(1): 128-132.

This study aimed to evaluate the effects of duration of exercise on bone mineral density by comparing groups of soccer players who competed in different leagues and differed in duration of training. Bone mineral density and ultrasound measurements of bone were found to be significantly higher in soccer players than controls, but did not differ between those in the premier league (playing for 12 hours per week on average) and those in the sixth league (playing for 6 hours per week on average). Bone measurements were significantly correlated with duration of exercise up to 6 hours per week, with weaker or non-significant associations beyond this. The authors conclude that effects on bone mineral density are obtained by 6h exercise per week, with no additional effects beyond this. This study is valuable in examining the effects of duration of exercise on bone, and findings are in broad agreement with findings from animal studies that increasing duration of exercise beyond a threshold does not produce further increases in BMD. However, the study is cross-sectional and so could be affected by selection bias, and sample sizes are relatively small for a cross-sectional study. Hopefully these findings will eventually be supported by findings from longitudinal studies.

Snow, C. M., Williams, D. P., LaRiviere, J., Fuchs, R. K. and Robinson, T. L. (2001).

“Bone gains and losses following seasonal training and detraining in gymnasts.” *Calcified Tissue International* 69(1): 7-12.

Female college gymnasts were found to have seasonal changes in lean mass, total body, spine and hip BMD, which paralleled seasonal changes in training. There were also non-seasonal increases over 2y in spine but not hip BMD, which might reflect continued effects of training or age-associated bone gain.

Weaver, C. M., Teegarden, D., Lyle, R. M., McCabe, G. P., McCabe, L. D., Proulx, W., Kern, M., Sedlock, D., Anderson, D. D., Hillberry, B. M., Peacock, M. and Johnston, C. C. (2001).

“Impact of exercise on bone health and contraindication of oral contraceptive use in young women.” *Medicine and Science in Sports and Exercise* 33(6): 873-880.

A 2-y exercise intervention consisting of resistance training and rope jumping increased total body BMD in healthy premenopausal women, whilst TBBMD declined in oral contraceptive users. Hip BMD decreased with exercise. There was no significant interaction between exercise and oral contraceptive use on BMD of total body or hip, but increases in spine BMC were significantly smaller in exercisers who also took oral contraceptives than in the other groups. Oral contraceptive users had lower bone turnover at baseline. This study highlights that the effects of physical activity may differ according to hormonal factors, and further studies are required to elucidate these relationships.

Kerr, D., Ackland, T., Maslen, B., Morton, A. and Prince, R. (2001).

Healthy Older Adults

“Resistance training over 2 years increases bone mass in calcium-replete postmenopausal women.” *Journal of Bone and Mineral Research* 16(1): 175-181.

Hip BMD increased in women participating in a progressive resistance training programme relative to women participating in an aerobic circuit training programme and sedentary controls. Changes in lumbar spine and total BMD did not differ significantly between groups.

Chien, M. Y., Wu, Y. T., Hsu, A. T., Yang, R. S. and Lai, J. S. (2000).

“Efficacy of a 24-week aerobic exercise program for osteopenic postmenopausal women.” *Calcified Tissue International* 67(6): 443-448.

A combination of treadmill walking and stepping produced impressive increases in spine and hip BMD in women with low bone density (2 and 7.6 % respectively). Meanwhile, a group of control subjects lost bone (-2.3 and -1.5 % at spine and hip). The large effects seen in this study might have been contributed to by lack of randomisation and the use of oestrogens by some women.

Snow, C. M., Shaw, J. M., Winters, K. M. and Witzke, K. A. (2000).

“Long-term exercise using weighted vests prevents hip bone loss in postmenopausal women.” *Journals of Gerontology Series a-Biological Sciences and Medical Sciences* 55(9): M489-M491.

Nine postmenopausal women, who followed a programme of weighted vest plus jumping exercise three times per week, 32 weeks a year for 5 years, maintained BMD, whilst 9 controls lost 3-4% from hip sites. This study is important in studying longer term effects of exercise- as effects of exercise are reversed on cessation it must be maintained over years to reduce fracture risk.

Jakes, RW, Khaw, KT, Day, NE, et al.

Patterns of physical activity and ultrasound attenuation by heel bone among Norfolk cohort of European Prospective Investigation of Cancer (EPIC Norfolk): population based study *British Medical Journal*, (2001) 322 (7279): 140-143

This study examined the associations between various parameters of physical activity and broadband ultrasound attenuation of bone (BUA- associated with BMD and an independent predictor of fracture risk) in 5210 adults aged 45-74 years. The minority who engaged in high impact activities (14% of men and 9% of women) had significantly higher BUA, whilst no benefit was observed with moderate activity. In women, BUA was positively associated with number of stairs climbed, and negatively associated with television viewing time.

This study sheds useful light on the types of activities habitually undertaken by older people which might have a role in reducing fracture risk. Further studies would be required to evaluate whether these activities would provide effective interventions for prevention of osteoporosis- although some of the activities studied here might not be suitable for sedentary older people. It would be interesting to follow up the cohort to examine the associations between

physical activity and fracture risk. Heel BUA might be more sensitive to physical activity than bone density at other skeletal sites, and physical activity might influence fracture risk through influencing fall risk. Hopefully the continuation of this study will be able to provide information on what types of physical activity are associated with reduced risk of fracture.

Brooke-Wavell, K., Prelevic, G. M., Bartram, C. and Ginsburg, J. (2000).

“The influence of physical activity on the response of bone mineral density to 5 years tibolone.” *Maturitas* 35(3): 229-235.

This study compared the response of bone to menopausal hormone replacement therapy according to physical activity. Spine BMD increased over 5y of HRT use regardless of physical activity level. Hip BMD at baseline tended to be higher in more physically active women, but only increased on HRT use in less active women. The findings again demonstrate an interaction between physical activity and hormonal status.

Hla, M. M., Davis, J. W., Ross, P. D., Yates, A. J. and Wasnich, R. D. (2001).

“The relation between lifestyle factors and biochemical markers of bone turnover among early postmenopausal women.” *Calcified Tissue International* 68(5): 291-296.

This study examined associations between lifestyle factors and biochemical markers of bone formation and resorption in 340 postmenopausal women aged 45-59y. Calcium supplement use (but not total calcium intake) was associated with reduced turnover. Smoking was associated with reduced formation but not resorption. Physical activity was not significantly associated with either marker- although physical activity was assessed using a questionnaire which assessed energy expenditure rather than any measure of bone loading. The study is novel in using biochemical markers to examine the influence of lifestyle variables on bone. The study yields some interesting suggestions on the relative magnitude of the factors studied but conclusions are limited by the cross-sectional design.

Robertson, M. C., Devlin, N., Gardner, M. M. and Campbell, A. J. (2001).

“Effectiveness and economic evaluation of a nurse delivered home exercise programme to prevent falls. 1: Randomised controlled trial.” *British Medical Journal* 322(7288): 697-701.

Robertson, M. C., Gardner, M. M., Devlin, N., McGee, R. and Campbell, A. J. (2001).

Effectiveness and economic evaluation of a nurse delivered home exercise programme to prevent falls. 2: Controlled trial in multiple centres.” *British Medical Journal* 322(7288): 701-704.

These trials evaluated effectiveness and cost of a programme of home based muscle strengthening and balance retraining exercises in elderly people. The exercise programme was based on one previously found to reduce the number of falls when directed by a physiotherapist in a research setting. The first study evaluated the programme delivered as part of a home based health service by a district nurse, whilst the second was delivered from general practices by practice nurses. Less than half of the patients approached chose to participate, but in those that did coherence and compliance were good: around ninety percent of participants completed the trials, and of the exercisers, around two thirds exercised twice per week, and nearly half three or more times per week. The incidence of falls was reduced in both studies (by 46% and 30% respectively). The number of serious injuries resulting from falls was reduced in the first study but not the second. Costs were similar in both settings.

These findings confirm that exercise interventions can reduce falls, and offer the additional information that programmes can be delivered effectively within primary care settings.

Wong, A. M., Lin, Y. C., Chou, S. W., Tang, F. T. and Wong, P. Y. (2001).

“Coordination exercise and postural stability in elderly people: Effect of Tai Chi Chuan.” *Archives of Physical Medicine and Rehabilitation* 82(5): 608-612.

Older people who regularly participated in Tai Chi Chuan were found to have better balance- but only when tested under conditions which simultaneously provided misleading visual and/or somatosensory stimuli; no difference was seen in static or dynamic balance with eyes open or closed.

Ringsberg, K. A. M., Gardsell, P., Johnell, O., Josefsson, P. O. and Obrant, K. J. (2001).

***“The impact of long-term moderate physical activity on functional performance. Bone mineral density and fracture incidence in elderly women.”* Gerontology 47(1): 15-20.**

Elderly women who had participated in regular physical activity for at least 20y had significantly better muscle strength, balance, walking speed, gait and vibration sensitivity than an age-matched urban control group (although not significantly better than a rural control group). BMD was highest in rural controls. Fracture rates were lowest in the active group and highest in urban controls.

This study suggests that lower fracture rates in physically active individuals may be related to neuromuscular performance. A strength of the study is its examination of long-term effects of physical activity: but women who have managed to maintain physical activity for 20y comprise a highly selected group, so differences between groups may be related in part to factors other than physical activity.

Brooke-Wavell, K., Prelevic, G. M., Bakridan, C. and Ginsburg, J. (2001).

***“Effects of physical activity and menopausal hormone replacement therapy on postural stability in postmenopausal women - a cross-sectional study.”* Maturitas 37(3): 167-172.**

Postural stability was better in more physically active postmenopausal women, but did not differ significantly according to HRT use. As a cross-sectional study, findings could be in part due to selection bias.

Elderly Patients/Fallers

Nowalk, M. P., Prendergast, J. M., Bayles, C. M., D'Amico, F. J. and Colvin, G. C. (2001).

***“A randomized trial of exercise programs among older individuals living in two long-term care facilities: the Falls-FREE program.”* Journal of the American Geriatrics Society 49: 859-865.**

Older people randomized to an aerobic and resistance training program or a tai chi intervention did not show any improvement in fall rates or functional abilities when compared to a control group. Compliance with the exercise interventions was poor, particularly for the Tai Chi intervention, with subjects attending less than a quarter of prescribed sessions on average after six months, so the poor compliance might explain the lack of significant findings. This study highlights that compliance with exercise interventions might be poor in institutionalised older people, with reasons for dropouts including episodes of illness, moving from the institution or death as well as motivational factors.

Jadelis, K., Miller, M. E., Ettinger, W. H. and Messier, S. P. (2001).

***“Strength, balance and the modifying effects of obesity and knee pain: results from the observational arthritis study in seniors (OASIS).”* Journal of the American Geriatrics Society 49: 884-891.**

This cross-sectional study found that knee and ankle strength were associated with dynamic balance in older people with knee pain. Patients with osteoarthritis and poor muscular strength might thus be at increased risk of falling but it is not yet clear whether improving strength in this population would improve balance.

Hauer, K., Rost, B., Rutschle, K., Opitz, H., Specht, N., Bartsch, P., Oster, P. and Schlierf, G. (2001).

***“Exercise training for rehabilitation and secondary prevention of falls in geriatric patients with a history of injurious falls.”* Journal of the American Geriatrics Society 49(1): 10-20.**

Older people who have fallen once are at increased risk of falling again, so fall prevention is of particular importance in this population. This study found that a programme including resistance and aerobic exercise as well as balance training dance and tai chi improved strength and balance, with a non-significant reduction in fall rates.

Richardson, J. K., Sandman, D. and Vela, S. (2001).

“A focused exercise regimen improves clinical measures of balance in patients with peripheral neuropathy.” Archives of Physical Medicine and Rehabilitation 82(2): 205-209.

Patients with peripheral neuropathy are at increased risk of falls, so interventions which might improve balance are also of particular interest in this population. A 3-week program of balance training and lower limb strength and flexibility exercises improved measures of balance relative to controls. However, the balance tests used were very similar to some of the training exercises so it is possible that the training effect was specific to this particular type of test. Furthermore, the program was very short - considerable further improvements might have been observed with a duration of over 6 weeks. It would be interesting to see whether this improvement in unipedal stance translates into a reduction in fall frequency in this population.

Kontulainen, S., Kannus, P., Haapasalo, H., Sievanen, H., Pasanen, M., Heinonen, A., Oja, P. and Vuori, I. (2001).

Physical Activity in Early Life and Later Bone Density

“Good maintenance of exercise-induced bone gain with decreased training of female tennis and squash players: A prospective 5- year follow-up study of young and old starters and controls.” Journal of Bone and Mineral Research 16(2): 195-201.

This group had previously observed higher BMD in the playing arm of female racket players, with the greatest difference in those who had commenced training before menarche. This study found that the difference between playing and non-playing arm were preserved despite a reduction in training frequency (from 4 to 1-2 times per week) - indicating that the effects of training could be maintained despite reduced frequency.

Hara, S., Yanagi, H., Amagai, H., Endoh, K., Tsuchiya, S. and Tomura, S. (2001).

“Effect of physical activity during teenage years, based on type of sport and duration of exercise, on bone mineral density of young, premenopausal Japanese women.” Calcified Tissue International 68(1): 23-30.

Whole body and lumbar spine BMD of women aged 20-39 y were significantly associated with physical activity during teenage years and at present, after adjustment for confounding factors including age, BMI, energy and calcium intake.

Vuillemin, A., Guillemin, F., Jouanny, P., Denis, G. and Jeandel, C. (2001).

“Differential influence of physical activity on lumbar spine and femoral neck bone mineral density in the elderly population.” Journals of Gerontology Series a-Biological Sciences and Medical Sciences 56(6): B248-B253.

Current bone mineral density was examined relative to reported physical activity at different stages of life in elderly men and women. Femoral neck BMD was significantly associated with sporting activity in the previous 20 years (but negatively associated with other activity in the previous 20 years!) Lumbar spine BMD was associated with sporting activity 61-80 years previously (i.e. as a child/teenager). The authors suggest that this indicates a differential response at different sites.

Bischoff, H. A., Conzelmann, M., Lindemann, D., Singer-Lindpaintner, L., Stucki, G., Vonthein, R., Dick, W., Theiler, R. and Stahelin, H. B. (2001).

“Self-reported exercise before age 40: Influence on quantitative skeletal ultrasound and fall risk in the elderly.” Archives of Physical Medicine and Rehabilitation 82(6): 801-806.

Female geriatric patients who reported participating in regular exercise before the age of 40 did not perform better on tests of functional status or muscular strength, but did have higher ultrasound measures of bone and fewer falls. Other factors associated with ultrasound measures of bone were current mobility and muscular strength. Falls were monitored prospectively in a subset of subjects, and factors associated with falling included not using a falling aid. This study could provide some evidence that exercise performed in middle age could be related to bone measures in old age. However, the study includes a large number of comparisons made in a relatively small group of subjects (96 women, 38 men) so it is possible that some significant findings have arisen through chance.

Research

Presented at the Seventeenth World Congress of the International Assoc. Of Gerontology, Vancouver, Canada 1 - 6 July 2001

THE IMPACT OF LONG-TERM MODERATE PHYSICAL ACTIVITY ON FUNCTIONAL PERFORMANCE, FRACTURE PREVALENCE AND BONE MINERAL DENSITY IN AGED WOMEN COMPARED TO CONTROLS.

K.A. Ringsberg, P.O. Josefsson, P. Gärdsell, O.Johnell, I.Sernbo

This Swedish study compared the effects of long-term moderate physical activity on functional performance, fracture prevalence and bone density in older active women (n=139) compared to age matched urban (n=139) and rural (n=88) control groups. Although no differences were found in bone density, fracture incidence were significantly higher in the urban group compared to the active group and the rural group.

THE EFFECT OF COUNSELLING BY HealthCare PROFESSIONALS ON INCREASING PHYSICAL ACTIVITY IN OLDER PEOPLE

M.Hirvensalo, Dept of Physical Education and The Finnish Centre for Interdisciplinary Gerontology, University of Jyväskylä, Finland. E. Heikkinen, The Finnish Centre for Interdisciplinary Gerontology and Dept of Health Sciences, University of Jyväskylä, Finland. T.Rantanen, The Finnish Centre for Interdisciplinary Gerontology and Dept of Health Sciences, University of Jyväskylä, Finland.

This study showed that encouragement to exercise by health care professionals led to an increase in initiation of new physical activities by older people.

ELDERLY FRANCO-ONTARIANS: INFORMED BUT POWERLESS WITH REGARDS TO PHYSICAL ACTIVITY AND HEALTH

Hélène Dallaire (University of Ottawa, Ottawa, Canada) Josianne Roma (University of Ottawa, Ottawa, Canada) Geneviève Rail (University of Ottawa, Ottawa, Canada) Suzanne Laberge (Université de Montréal, Canada) Philippe Voyer (Université Laval, Québec, Canada)

This qualitative study of French-Canadian women aged 65 to 75 years showed that the majority know about the benefits of physical activity as it relates to healthy, but many felt powerless when it came to integrating physical activity in their daily lives.

MOBILITY AND PHYSICAL ACTIVITY AS PREDICTORS OF DEPRESSIVE SYMPTOMS AMONG COMMUNITY-DWELLING OLDER WOMEN.

P. Lampinen, E. Heikkinen, R-L. Heikkinen (The Finnish Centre for Interdisciplinary Gerontology, and Dept of Health Sciences, University of Jyväskylä, Finland)

This Finnish study interviewed community dwelling women aged 65 to 84 years in 1988 and again in 1996. Participants (n=428) were classified into four groups: 1. Mobile-Active, 2. Mobile-Sedentary, 3. Impaired-Active, 4. Impaired-Sedentary. The women with impaired mobility had more depressive symptoms than those with intact mobility irrespective of the level of physical activity. Impaired mobility and physical inactivity, longstanding somatic illnesses and older age increased the risk of developing depressive symptoms during the follow-up period. The women with impaired mobility but active physical lifestyle had a lower risk for depressive symptoms compared to their more sedentary counterparts. The authors concluded that elderly women should be encouraged to prevent mobility problems through sufficient physical activity.

PHYSICAL ACTIVITY, HEALTH STATUS AND DEPRESSION AMONG OLDER ADULTS IN CANADA

John Cairney (Brock University, St. Catharines, ON Canada) Brent E. Faught (Brock University, St. Catharines, ON Canada) John Hay (Brock University, St. Catharines, ON Canada) Robert Kerr (Brock University, St. Catharines, ON Canada)

Data from this Canadian Population Health Survey suggested that among older adults, higher physical activity was associated with lower levels of distress, even after adjustment for physical health.

PHYSICAL ACTIVITY AND THE RISK OF FALLS AND OLDER MEN AND WOMEN

S.M.F. Pluijm (EMGO Institute, Vrije Universiteit, Amsterdam), V.S. Stel (EMGO Institute, Vrije Universiteit, Amsterdam), M. Visser (EMGO Institute, Vrije Universiteit, Amsterdam), D.J.H. Deeg (EMGO Institute, Vrije Universiteit, Amsterdam), J.H. Smit (Dept of Sociology and Social Gerontology, Vrije Universiteit, Amsterdam), P. Lips (Dept of Endocrinology, VU-Hospital, Amsterdam).

This study of the Longitudinal Aging Study Amsterdam (LASA) in 1383 men and women aged 65 to 88 years investigated the relationship between the level of physical activity in the previous 2 weeks, using a detailed interviewer-administered questionnaire, and fall events over a 3 year period. The data indicated that a high level of total physical activity and walking activity protected against falls in both sexes.

PHYSICAL ACTIVITY IN OLDER PEOPLE MEASURED BY A QUESTIONNAIRE, A SEVEN-DAY DIARY AND A PEDOMETER

V.S. Stel (EMGO Institute, Vrije Universiteit, The Netherlands), J.H. Smit (Dept of Sociology, Vrije Universiteit, The Netherlands), S.M.F. Pluijm, (EMGO Institute, Vrije Universiteit, The Netherlands), P. Lips (Dept of Endocrinology, VU Hospital, The Netherlands).

This study validated the physical activity questionnaire used in the above LASA study in a subgroup, against a diary and a pedometer.

The full abstracts can be seen in Gerontology 2001;47(suppl.1): 1-718.

Many other relevant topics were also presented at this world congress, including those on falls and osteoporosis management and the abstracts can also be seen in the above abstract supplement.

IsPAPOFF

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